However, the Commissioner is authorized to charge any underpayment or credit any overpayment to Deposit Account No. 50-0892.

AMENDMENT

In the claims:

Please amend Claims 3 and 7 so that the text of the amended claim reads as follows:

B1 3. (Amended). A cell according to Claim 2, wherein said cell is a mouse embryonic stem cell.

B2 7. (Amended) An isolated mouse embryonic stem cell line comprising an engineered retroviral gene trap vector in at least one gene comprising a polynucleotide sequence disclosed in SEQ ID NO:125.

SUMMARY OF THE INVENTION

The human genome has been sequenced. For as long as the human species endures, virtually all future human drugs (with the notable exception of antibiotics) will directly or indirectly interact with products encoded by one or more products encoded by this limited subset of genetic information. Thus the remaining and more scientifically daunting challenge is to conclusively identify those portions of the genome that actually encode proteins, and then define the biological functions of these proteins. For a variety of reasons, the mouse has emerged as the animal system that will be employed to discover a given gene's role in mammalian physiology. The present invention derives from the discovery of a high throughput method of generating clonal lines of mutated murine ES cells. The described ES cells are totipotent. Consequently, the described ES cells can be cultured and genetically altered *in vitro* and then used to produce mice (via microinjection of the ES cells to generate chimeric mice and subsequent breeding steps) having a genetically engineered mutation in a specific gene. The resulting "knockout" mice can then be subject to a medical work-up to determine the function of the corresponding gene product (or absence thereof) in mammalian physiology. As such, the mutated ES cells of the presently described invention will likely provide many discoveries of human gene function (via the study of the effects of the corresponding murine gene in mutated/"knockout" mice). The described collection of mutated murine ES cell clones represent a subset of a larger collection of over one two hundred thousand ES cell clones that have been identified using a high throughput gene trapping system.

The elected species presently at issue mutates the murine genetic locus encoding SEQ ID